

Chemistry and Materials Research in Cultural Heritage Science (CHS)

PROGRAM SOLICITATION

NSF 11-528

REPLACES DOCUMENT(S): NSF 10-534



National Science Foundation

Directorate for Mathematical & Physical Sciences
Division of Chemistry
Division of Materials Research

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

May 11, 2011

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), [NSF 11-1](#), was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in [NSF 11-1](#) apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in [NSF 11-1](#).

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* [Chapter II.C.2.g\(xi\)](#) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

Revision Summary

This is not a new funding opportunity. This solicitation updates and replaces NSF 10-534, Chemistry and Materials Research at the Interface between Science and Art (SCIART).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Chemistry and Materials Research in Cultural Heritage Science (CHS)

Synopsis of Program:

The National Science Foundation (NSF) seeks to enhance opportunities for collaborative activities between conservation scientists, chemists and materials scientists to address grand challenges in the field of science of cultural heritage. A 2009 workshop, which was co-sponsored by NSF and the Andrew W. Mellon Foundation, concluded that the field of cultural heritage science could greatly benefit from collaboration between conservation scientists, primarily located in US museums, and chemists and materials scientists in academic institutions. Largely in line with the workshop report, which can be found at <http://mac.mellon.org/NSF-MellonWorkshop> the program solicits collaborative proposals between researchers in US museums and academic institutions that aim to: a) develop new and improved analytical techniques and instruments with high sensitivity and spatial resolution

(large and small scale) for restricted volume and/or standoff detection of component materials, degradation products and deterioration markers that are suitable for non-destructive analysis of cultural heritage objects; b) study dynamic changes leading to degradation of cultural heritage objects; c) design new multi-functional treatment materials for cultural heritage objects; d) develop new theoretical models to predict dynamic processes in cultural heritage objects that lead to their degradation while taking into account their molecular and materials properties and their surface and bulk interactions with environmental perimeters. While the current solicitation is limited to chemistry and materials research topics, it is envisioned that the program will be expanded in future years to include additional areas of interest to the field of cultural heritage science. The program seeks highly innovative 3-year collaborative projects that break new ground and demonstrate a high level of synergy between the collaborating investigators. Formation of new collaborations is strongly encouraged. Investigators who have been collaborators must demonstrate that the proposed project represents a new research direction for the collaborative team. The program will not accept proposals for projects that are currently funded by other funding sources. The program will also not accept proposals for projects that largely overlap or are closely related to research projects that are currently funded by other sources nor will it accept projects that only constitute an incremental extension of projects that are already carried out in the collaborators' laboratories. The program also requires that the proposed projects will meaningfully involve the participation of undergraduate students, graduate students and postdoctoral research associates, including those from underrepresented groups. The program also encourages the development and use of cyber infrastructure to increase the level of synergy of the proposed projects.

Cognizant Program Officer(s):

- Dr. Zeev Rosenzweig, CHE Program Director, telephone: (703) 292-7719, email: zrosenzw@nsf.gov
- Dr. Michael J. Scott, DMR Program Director, telephone: (703) 292-4771, email: mjscott@nsf.gov
- Dr. Lynnette D. Madsen, DMR Program Director, telephone: (703) 292-4936, email: lmadsen@nsf.gov
- Dr. Kelsey D. Cook, CHE Program Director, telephone: (703) 292-7490, email: kcook@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.049 --- Mathematical and Physical Sciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 5 to 10

Anticipated Funding Amount: \$4,000,000 for all awards depending on the availability of funds. Each anticipated 3-year award will total approximately \$420,000 (\$140,000 per year) including direct and indirect costs. Principal investigators are advised that there are no set aside funds for this solicitation and the exact number of awards and their level would depend on the quality of the proposed projects in comparison to all other proposals submitted to the Division of Chemistry (CHE) and the Division of Materials Research (DMR).

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

PI Limit:

Since the solicitation calls for collaborative projects between cultural heritage scientists mainly located in US museums and chemistry and materials scientists in academic institutions, a principal investigator (PI) must demonstrate expertise in at least one of these areas and be a member of a multi-disciplinary collaborative team to be eligible to submit a proposal in response to this solicitation.

Whenever possible, in addition to the PI, the co-PI or co-PIs should be listed on the cover sheet.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 1

An investigator may be a PI or Co-PI of only one proposal submitted in response to this solicitation.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable

- **Full Proposals:**
 - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
 - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Not Applicable

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):
May 11, 2011

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions: Standard NSF award conditions apply.

Reporting Requirements: Standard NSF reporting requirements apply.

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I. INTRODUCTION

Recognizing the importance of increasing fundamental understanding at the molecular and micro-structural level of cultural heritage materials to enhance our ability to preserve the world's material culture and to learn about past cultures, civilizations and technologies, the National Science Foundation (NSF) seek to enhance opportunities for collaborative activities between cultural heritage scientists, primarily located in US museums, and chemists and materials scientists in academic institutions in order to address grand challenges in cultural heritage science. The NSF Divisions of Chemistry (CHE) and Materials Research (DMR) will

accept innovative collaborative research proposals to address grand challenges in the field of cultural heritage science.

II. PROGRAM DESCRIPTION

The program seeks highly innovative 3-year collaborative projects that break new ground and demonstrate a high level of synergy between the collaborating investigators in the following areas: a) Development of new and improved analytical techniques for materials properties and structural characterization of cultural heritage objects; b) Understanding material degradation and aging through experimental studies of the interactions and response of cultural heritage objects to environmental parameters (bulk and surface interactions) and the development of new theoretical models to predict the dynamic properties of cultural heritage objects that would lead to their degradation while taking into consideration their molecular and micro-structural properties; and c) Development of new methods for materials stabilization, strengthening and repair. While the current solicitation is limited to chemistry and materials research topics, it is envisioned that the program will be expanded to include additional areas of interest to the field of cultural heritage science in the coming years.

Formation of new collaborations is strongly encouraged. Investigators who have been collaborators must demonstrate that the proposed project represents a new research direction for the collaborative team. The program will not accept proposals for projects that are currently funded by other funding sources. The program will also not accept proposals for projects that largely overlap or are closely related to research projects that are currently funded by other sources nor will it accept proposals for projects that only constitute an incremental extension of projects that are already carried out in the collaborators' laboratories. The program also requires that the PIs will meaningfully involve the participation of undergraduate students, graduate students and postdoctoral research associates, including those from underrepresented groups in their proposed project. **PIs who seek support for postdoctoral research associate positions must provide a postdoctoral mentoring plan as a supplementary document. Proposals that seek support for a postdoctoral researcher but fail to provide a postdoctoral mentoring plan will be returned without review.** The program also encourages the development and use of cyber infrastructure to increase the level of synergy of the proposed projects.

III. AWARD INFORMATION

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: 5 to 10

Anticipated Funding Amount: \$4,000,000 for all awards depending on availability of funds. Each anticipated 3-year award will total approximately \$420,000 (\$140,000 per year) including direct and indirect cost. Principal investigators are advised that there are no set aside funds for this solicitation and the exact number of awards and their level would depend on the quality of the proposed projects in comparison to all other proposals submitted to CHE and DMR.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

PI Limit:

Since the solicitation calls for collaborative projects between cultural heritage scientists mainly located in US museums and chemistry and materials scientists in academic institutions, a principal investigator (PI) must demonstrate expertise in at least one of these areas and be a member of a multi-disciplinary collaborative team to be eligible to submit a proposal in response to this solicitation.

Whenever possible, in addition to the PI, the co-PI or co-PIs should be listed on the cover sheet.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 1

An investigator may be a PI or Co-PI of only one proposal submitted in response to this solicitation.

Additional Eligibility Info:

US Investigators who are currently funded by the CHS (previously SCIART) program are not eligible to participate in new CHS projects as PI or Co-PI.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.3 of the Grant Proposal Guide provides additional information on collaborative proposals.

PIs must carefully follow the proposal preparation instructions. PIs are also advised to submit their proposals as early as possible and at least one day prior to the proposal submission deadline to avoid the possibility of late submission. Proposals that are submitted late or proposals that do not comply with the GPG or NSF Grants.gov Application Guide guidelines for proposal preparation will be returned without review.

When preparing their proposal, PIs must identify an individual investigator program in the Division of Chemistry (CHE) or in the Division of Materials Research (DMR), which is appropriate for the proposed research and select this program when preparing the proposal cover page. PIs of interdisciplinary projects can identify primary and secondary programs. Detailed descriptions of the individual investigator programs in CHE can be found at <http://www.nsf.gov/div/index.jsp?div=CHE>. Detailed descriptions of the individual investigator programs in DMR can be found at <http://www.nsf.gov/div/index.jsp?div=DMR>. PIs who unable to identify an appropriate individual investigator program in CHE or DMR for their proposed research should not submit a proposal to the CHS program.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):
May 11, 2011

D. FastLane/Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov.

Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: http://www07.grants.gov/applicants/app_help_reso.jsp. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgments.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

In addition to the two NSB-approved merit review criteria, the reviewers and panel will be asked to comment on whether the proposal addresses (1) a grand challenge in the field of cultural heritage science, (2) whether the researchers demonstrated a clear need for collaboration, the synergy between the collaborating groups, the collaboration plan between the investigators, and (3) whether the proposed project provides meaningful training experience to students and postdoctoral researchers in the field of cultural heritage science.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program

Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Dr. Zeev Rosenzweig, CHE Program Director, telephone: (703) 292-7719, email: zrosenzw@nsf.gov
- Dr. Michael J. Scott, DMR Program Director, telephone: (703) 292-4771, email: mjscott@nsf.gov
- Dr. Lynnette D. Madsen, DMR Program Director, telephone: (703) 292-4936, email: lmadsen@nsf.gov

- Dr. Kelsey D. Cook, CHE Program Director, telephone: (703) 292-7490, email: kcook@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.
- Paul Spyropoulos, Computer Specialist, 1055 S, telephone: (703) 292-4968, fax: (703) 292-9037, email: pspyropo@nsf.gov

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the [NSF web site](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

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| • Location: | 4201 Wilson Blvd. Arlington, VA 22230 |
| • For General Information (NSF Information Center): | (703) 292-5111 |
| • TDD (for the hearing-impaired): | (703) 292-5090 |
| • To Order Publications or Forms: | |
| Send an e-mail to: | nsfpubs@nsf.gov |
| or telephone: | (703) 292-7827 |
| • To Locate NSF Employees: | (703) 292-5111 |

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230, USA
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